AMENDMENT THIRTEEN TO CONSULTANT CONTRACT FOR SERVICES NO. 05SC0293018 MIDDLE PINEY RESERVOIR PROJECT BETWEEN WYOMING WATER DEVELOPMENT COMMISSION AND STANTEC CONSULTING SERVICES, INC.

1. **Parties.** This Amendment is made and entered into by and between the Wyoming Water Development Commission [Commission], whose address is: 6920 Yellowtail Road, Cheyenne, Wyoming 82002; and Stantec Consulting Services Inc. [Consultant], whose address is: 370 Interlocken Blvd, Suite 300, Broomfield, CO 80021.

2. **Purpose of Amendment.** This Amendment shall constitute the thirteenth amendment to the Contract between the Commission and the Consultant. The purpose of this Amendment is to: a) increase the total Contract dollar amount by twenty-five thousand dollars ($25,000.00) to two million, five hundred five thousand, two hundred seventeen dollars ($2,505,217.00); b) amend the responsibilities of the Consultant; and c) replace Exhibit A-3, as amended, with Exhibit A-4, Revised Scope of Services.

   The original Contract, dated June 15, 2006, required the Consultant to investigate the options for reconstructing and possibly enhancing Middle Piney Reservoir while making it safe for water storage for a total Contract amount of one hundred ninety-one thousand, seven hundred seventeen dollars ($191,717.00) with an expiration date of June 30, 2008.

   Amendment One, dated June 9, 2008, extended the Contract expiration date from June 30, 2008 to October 1, 2008.

   Amendment Two, dated November 17, 2008, extended the Contract expiration date from October 1, 2008 to December 31, 2009.

   Amendment Three, dated March 11, 2009, documented the WWDC acceptance of the final report and released retainage.

   Amendment Four, dated June 5, 2009, amended the Contract to provide assistance to WWDC in addressing permitting issues and ownership issues with the United States Forest Service. Furthermore, it included mitigation analysis, surveying, stream gauging, drilling and geotechnical design, and preliminary engineering design. The amendment increased the total Contract amount by five hundred thousand dollars ($500,000.00) from one hundred ninety-one thousand, seven hundred seventeen dollars ($191,717.00) to six hundred ninety-one thousand, seven hundred seventeen dollars ($691,717.00), and extended the Contract expiration date from December 31, 2009 to December 31, 2011.

   Amendment Five, dated November 7, 2011, extended the Contract expiration date from December 31, 2011 to December 31, 2012.

Amendment Six, dated November 15, 2012, extended the Contract expiration date from December 31, 2012 to December 31, 2014.

Amendment Seven, dated March 8, 2013, acknowledged the purchase of States West Water Resources Corporation by Wenck Associates, Inc. and replaced Exhibit B Hourly Rate and Reimbursable Expenses Price Schedule.

Amendment Eight, dated March 13, 2014, supplemented existing tasks to assist the WWDC in project coordination, final design and specification preparation, and permit acquisition. The amendment increased the total Contract amount by three hundred thousand dollars ($300,000.00), from six hundred ninety-one thousand, seven hundred seventeen dollars ($691,717.00) to nine hundred ninety-one thousand, seven hundred seventeen dollars ($991,717.00), and extended the Contract expiration date from December 31, 2014 to March 31, 2016.

Amendment Nine, dated March 7, 2016, extended the Contract expiration date from March 31, 2016 to March 31, 2017.

Amendment Ten, dated March 17, 2017, amended the Contract to: a) add Level III bidding, construction management, field inspection, project closeout, and office support responsibilities for the Consultant; b) increase the total Contract dollar amount by eight hundred twenty-four thousand, five hundred dollars ($824,500.00) from nine hundred, ninety-one thousand, seven hundred seventeen dollars ($991,717.00) to one million, eight hundred sixteen thousand, two hundred seventeen dollars ($1,816,217.00); and c) extend the term of the Contract from March 31, 2017 to December 31, 2021.

Amendment Eleven, dated May 20, 2019, amended the Contract to: a) increase the total Contract dollar amount by one hundred eighty-three thousand dollars ($183,000.00) to one million, nine hundred ninety-nine thousand, two hundred seventeen dollars ($1,999,217.00); b) extend the term of the Contract through June 30, 2023; c) replace Exhibit A, as amended, with Exhibit A-2, Revised Scope of Services; and d) replace Exhibit B, as amended, with Exhibit B-2.

Amendment Twelve, dated June 8, 2021, amended the Contract to: a) increase the total Contract dollar amount by four hundred eighty-one thousand dollars ($481,000.00) to two million, four hundred eighty thousand, two hundred seventeen dollars ($2,480,217.00); b) amend the responsibilities of the Consultant; c) replace Exhibit A-2, as amended, with Exhibit A-3, Revised Scope of Services; and d) to acknowledge the acquisition of Wenck Associates, Inc. by Stantec Consulting Services Inc.

3. **Term of the Amendment.** This Amendment shall commence upon the date the last required signature is affixed hereto (Effective Date), and shall remain in full force and effect through the term of the Contract, as amended, unless terminated at an earlier date pursuant to the provisions of the Contract, or pursuant to federal or state statute, rule or regulation.

4. **Amendments.**

A. The second sentence of Section 4.A. of the original Contract is hereby amended to read as follows:

"The total payment under this Contract shall not exceed two million, five hundred five thousand, two hundred seventeen dollars ($2,505,217.00)."

B. Section 4.B. of the original Contract is hereby amended in its entirety to read as follows:

"B. Project Budget. The Project budget for each task included in Exhibit A-4 is as follows:

Level II Tasks		Estimated Cost
Task 1.	Scoping and Project Meetings	$ 12,368.76
Task 2.	Access	$ 1,333.75
Task 3.	Surveying	$ 6,466.90
Task 4.	System Efficiencies and Conservation Opportunities	$ 9,010.94
Task 5.	Identify Areas of Need and Demand Projections	$ 1,857.66
Task 6.	Middle Piney Creek Hydrology	$ 31,868.69
Task 7.	Evaluation of the Existing Structure	$ 13,375.77
Task 8.	Enlargement Potential	$ 1,351.02
Task 9.	Geotechnical Evaluation	$ 37,568.63
Task 10.	Preliminary Designs	$ 17,086.00
Task 11.	Environmental and Permitting Issues	$ 13,520.44
Task 12.	Cost Estimates	$ 5,671.72
Task 13.	Economic Analysis and Project Financing	$ 10,498.99
Task 14	Legal Entity	$ 1,182.14
Task 15.	Reports	$ 16,100.00
Task 16.	Project Presentation and Public Hearing	$ 2,126.58
Task 17.	Project Coordination	$ 61,300.00
Task 18.	Stream Gaging	$ 65,880.00
Task 19.	Surveying	$ 31,643.68
Task 20.	Permit Acquisition	$ 136,250.00
Task 21.	Final Geotechnical Investigation	$ 245,250.00
Task 22.	Final Design and Specification Preparation	$ 260,056.32
Task 23.	Acquisition of Access and Rights of Way	$ 780.22
Task 24.	Discretionary Task	$ 9,168.79
Level II Subtotal		$ 991,717.00

Level III Tasks		Estimated Cost
Task 1.	Bidding	$ 10,300.00
Task 2.	Construction Management	$ 313,400.00
Task 3.	Field Inspection	$ 746,000.00
Task 4.	Project Closeout	$ 47,500.00
Task 5.	Office Support	$ 4,300.00
Task 6.	Zone 6 Embankment, Riprap and Weir Augmentation Evaluation	$ 33,000.00
Task 7.	Discretionary Task	$ 150,000.00
Task 8.	Final Grout Work	$ 133,000.00
Task 9.	Project Grouting Report	$ 51,000.00
Task 10.	Seepage Control System Improvements and Site Evaluation	$ 25,000.00
Level III Subtotal		$ 1,513,500.00
PROJECT TOTAL COST		**$ 2,505,217.00**

The amounts for each task are estimates only, but are not to be exceeded unless authorized in writing by the Commission. The Contract total amount is controlling. Payment shall be made directly to the Consultant. The Consultant shall maintain hourly records of time worked by its personnel to support any audits the state or the Commission may require. Billing reports shall be submitted no more often than monthly for activities and costs accrued since the last billing report and shall be made on forms provided by the Office. The Consultant may use alternate billing forms if approved in advance by the Office project manager. A brief project progress report summarizing project activities in the billing period must be submitted with each billing."

5. Amended Responsibilities of the Consultant.

Responsibilities of the Consultant are hereby amended as follows:

A. As of the Effective Date of this Amendment, Exhibit A-3, Scope of Services, as amended, which was attached to the original Contract, is superseded and replaced by Exhibit A-4, Revised Scope of Services, which is attached to this Amendment and incorporated into the original Contract by this reference. All references to "Exhibit A-3" in the original Contract, and in any amendments thereto, are amended to read: "Exhibit A-4".

6. Amended Responsibilities of the Commission.

Responsibilities of the Commission have not changed.

7. **Special Provisions.**

A. **Same Terms and Conditions.** With the exception of items explicitly delineated in this Amendment, all terms and conditions of the original Contract, and any previous amendments, between the Commission and the Consultant, including but not limited to sovereign immunity, shall remain unchanged and in full force and effect.

B. **Counterparts.** This Amendment may be executed in counterparts. Each counterpart, when executed and delivered, shall be deemed an original and all counterparts together shall constitute one and the same Amendment. Delivery by the Consultant of an originally signed counterpart of this Amendment by PDF shall be followed up immediately by delivery of the originally signed counterpart to the Commission.

8. **General Provisions.**

A. **Entirety of Contract.** The Original Contract, consisting of twelve (12) pages; Exhibit A, Scope of Services, consisting of ten (10) pages; Exhibit B, consisting of one (1) page; Amendment One, consisting of two (2) pages; Amendment Two, consisting of two (2) pages; Amendment Three, consisting of three (3) pages; Amendment Four, consisting of eight (8) pages; Exhibit B, consisting of one (1) page; Amendment Five, consisting of three (3) pages; Amendment Six, consisting of three (3) pages; Amendment Seven, consisting of four (4) pages; Amendment Eight, consisting of four (4) pages; Amendment Nine, consisting of three (3) pages; Amendment Ten, consisting of ten (10) pages; Amendment Eleven, consisting of six (6) pages; Exhibit A-2, Scope of Services, consisting of twenty-one (21) pages; Exhibit B-2, consisting of one (1) page; Amendment Twelve, consisting of six (6) pages; Exhibit A-3, consisting of twenty-one (21) pages and this Amendment Thirteen, consisting of six (6) pages; Exhibit A-4, consisting of twenty-one (21) pages, represent the entire and integrated Contract between the parties and supersede all prior negotiations, representations, and agreements whether written or oral.

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9. **Signatures.** The parties to this Amendment, through their duly authorized representatives, have executed this Amendment on the dates set out below, and certify that they have read, understood, and agreed to the terms and conditions of this Amendment.

This Amendment is not binding on either party until approved by A&I Procurement and the Governor of the State of Wyoming or his designee, if required by Wyo. Stat. § 9-2-1016(b)(iv).

WYOMING WATER DEVELOPMENT COMMISSION:

_____ _____

Clinton Glick — Date
Chairman

_____ _____

Ronald E. Kailey, Jr. — Date
Secretary

STANTEC CONSULTING SERVICES INC.:

_____ _____

Dylan Wade, P.E., Associate — Date
Employer Identification Number: 11-2167170

ATTORNEY GENERAL'S OFFICE: APPROVAL AS TO FORM

Meg Pope # 218698 — 1/3/22

Megan Pope, Senior Assistant Attorney General — Date

EXHIBIT A-4
REVISED SCOPE OF SERVICES

A. AUTHORIZATION:

The Wyoming Legislature has authorized the Wyoming Water Development Commission to conduct the project study and perform design and construction engineering described herein. The Consultant will complete the tasks and requirements outlined in Exhibit A-4, Revised Scope of Services.

B. PROJECT DESCRIPTION:

1. Location. Middle Piney Reservoir is located on the Middle Piney Creek, approximately thirty (30) miles west of Big Piney/Marbleton in Sublette County.

2. Purpose. To perform a Level II study of the Middle Piney Reservoir.

3. History. The Middle Piney Dam is an earthen structure that was constructed in 1940 to provide irrigation and domestic water. In 1979, the Army Corps of Engineers inspected the dam and gave it a high hazard potential classification for damage or loss of life in the event of failure. They also noted considerable seepage under and around the dam. Due to seepage, the dam is relatively ineffective for storage of water except in early spring when flow is high. The Forest Service has locked the gates in the open position.

C. PROJECT REQUIREMENTS:

1. Monthly Progress Reports and Billing Statements

   The Consultant shall submit a brief monthly progress report outlining the study status, progress, and results to date, regardless of whether or not a billing statement is submitted, on or before the last working day of the month.

   Each billing statement must include a task-by-task report and receipts for reimbursable expenses justifying the cost items contained in the billing statement. The monthly progress report may be used as the justification for the billing statement as long as all cost items covered in the billing statement are addressed in the progress report.

2. Computer Models, Statement of Assumptions, Project Work File

   a. If the Consultant writes or uses a computer model or spreadsheet as a part of this project, the Consultant shall submit to the WWDC for approval all proposed model names and data formats prior to beginning work on that task. All data shall be submitted to WWDC in written and digital formats

with the final report. Digital media shall be labeled by the Consultant to provide sufficient detail to access the information on that media. User manuals shall be submitted by the Consultant to WWDC providing complete documentation of computer models developed under this project. The user manuals shall also contain the source code language and the type of computer equipment necessary to operate the model(s). All computer models, databases, and spreadsheets developed herein (written and digital formats) are due on the same date as the final report.

b. To facilitate the Commission's accurate evaluation of the Consultant's work product, computations, conclusions and recommendations, the Consultant shall:

* Include in the final report a section describing the assumptions and methodology used by the Consultant in generating the data and conclusions contained in that chapter.

* Maintain a project work file containing the materials used in project analysis. This file will be available for review by the Commission and should be organized in such a way as to allow replication of the steps and procedures used by the Consultant to reach the conclusions described in the study.

* Prepare a project notebook containing a description of the assumptions and methodologies used in the project analysis. The notebook shall be organized in such a way as to allow replication of the steps, calculations, and procedures used by the Consultant to reach the conclusions described in the draft final report. The project notebook shall be submitted with the draft final report.

3. Cost Estimates

The Consultant shall provide, as a part of project cost estimates, an estimate of:

a. The cost to prepare final plans and specifications.

b. The cost to acquire permits and to mitigate project impacts.

c. The cost of project legal expenses.

d. The cost of acquiring access and rights-of-way.

4. Calculation of Engineering Costs and Contingencies

The Consultant shall use the following guidelines in calculating Level III cost estimates:

Level III Cost Estimates

Preparation of Final Designs and Specifications		$_____
Permitting and Mitigation		$_____
Legal Fees		$_____
Acquisition of Access and Rights of Way		$_____
Cost of Project Components	$_____	
	$_____	
	$_____	
Construction Cost Subtotal #1	$_____	
Engineering Costs = CCS#1 x 10%	$_____	
Subtotal #2	$_____	
Contingency = Subtotal #2 x 15%	$_____	
Construction Cost Total		$_____
Project Cost Total		$_____

5. Final Report

The Consultant shall use the Contract Scope of Services as the outline for draft and final reports so that Consultant compliance with Contract provisions can be verified. IF THE FINAL REPORT CONTAINS INFORMATION OF AN ENGINEERING NATURE, THE COVER OF THE FINAL REPORT, ALL PLATES, AND THE EXECUTIVE SUMMARY MUST BE STAMPED AND SIGNED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF WYOMING. IF THE FINAL REPORT CONTAINS INFORMATION OF A GEOLOGIC NATURE, THE COVER OF THE FINAL REPORT, ALL PLATES, AND THE EXECUTIVE SUMMARY MUST BE STAMPED AND SIGNED BY A PROFESSIONAL GEOLOGIST LICENSED IN THE STATE OF WYOMING. IF THE FINAL REPORT CONTAINS INFORMATION OF BOTH AN ENGINEERING AND GEOLOGIC NATURE, THE COVER OF THE FINAL REPORT, ALL PLATES, AND THE EXECUTIVE SUMMARY MUST BE STAMPED AND SIGNED BY BOTH A PROFESSIONAL ENGINEER AND A PROFESSIONAL GEOLOGIST LICENSED IN THE STATE OF WYOMING. As allowed by the Board of Registration for Professional Geologists and the Board of Registration for Professional Engineers, the consultant may utilize an electronic seal and signature. However, the reproducible original to be submitted as part of the deliverables required herein must utilize an original seal(s) and original signature(s).

6. Final Report - Digital Format

In addition to the paper submittal described in Section C.5 above, the Consultant shall also provide the final documents and related materials in a digital format. This digital format shall contain the final documents in their entirety, including all text, tables, plates, figures, etc. The deliverables under this section shall be contained on a standard CD ROM(s) or DVD ROM(s). The document shall be in Word 2003 and Adobe Acrobat V7 format. Any plates, figures, etc. not suitable for Word 2003 shall be in AutoCAD Map 2000, ArcGIS 8.x or higher, Adobe Acrobat, or compatible format. Other formats may be used if approved in advance by the WWDC project manager. The final documents will also be provided fully assembled into one file, in a complete "internet ready" digital format to facilitate their distribution via the WWDC website.

7. Anticipated Project Funding Assistance

The Consultant shall clearly identify project components eligible for WWDC funding, both in cost estimates and in project mapping. The Consultant shall verify project component funding eligibility with the WWDC prior to commencing any economic analysis. Unless otherwise directed by the WWDC project manager, the Consultant shall assume that rehabilitation projects will be funded with a 67% grant and a 33% loan. The WWDC loan portion of the project will be financed at a 4% interest rate with a term to be specified by the WWDC project manager. New development projects will be funded with a 67% grant and 33% loan, at a 4% interest rate with a term to be specified by the WWDC project manager. If funding is anticipated from another agency, such as the Office of State Lands and Investments, Abandoned Mine Lands (AML) or Rural Utility Service (RUS), the Consultant shall prepare cost estimates for system components not eligible for WWDC assistance in a format and level of detail acceptable to the potential funding agency.

If required in the Contract Scope of Services, the Consultant shall provide the information necessary to complete applications to RUS, the Office of State Lands and Investments, and any other identified funding sources.

8. Project Access

The Consultant shall be responsible for obtaining access as required for project tasks.

9. Stand-By Time

The WWDC will not reimburse the Consultant for stand-by time charges for the Consultant's supervisory personnel.

10. Well Permitting

All wells developed under this program shall list the State of Wyoming, Water Development Commission as the permittee. The Consultant shall be responsible for obtaining the permit.

11. Verification Log

After all casing has been installed in the well, the WWDC may require that a geophysical log be performed on the well to verify casing placement. A copy of this log shall be included in the final report.

D. LEVEL II SCOPE OF SERVICES:

Task 1. Scoping and Project Meetings

A scoping meeting shall be held early in the project schedule to familiarize the sponsor and interested parties with the scope of the project and to obtain input from affected parties. The Consultant will prepare a presentation, including maps and other visual aids, to explain the project studies.

The Consultant shall plan for a minimum of four additional project meetings to be held in the project area. Three meetings will be scheduled at the discretion of the WWDC project manager depending on developments during the study. A results presentation project meeting will be held at the conclusion of the study.

Project meetings will be conducted, as necessary, for the coordination of project activities and for keeping the sponsors informed of project progress. Several informal meetings with the project sponsor and steering committee may be necessary during the course of the study. In the interest of economy, meetings shall be scheduled to coincide with fieldwork, if possible. The Consultant shall notify the WWDC project manager in advance of any meetings with the project sponsor or other interested parties. Consultant will be responsible for setting and conducting these meetings in coordination with the WWDC and sponsor. The consultant will prepare all notices and needed materials for the meetings.

Task 2. Access

The Consultant shall be responsible for obtaining access as required for all project tasks.

Task 3. Surveying

The Consultant shall be responsible for the surveying necessary to prepare designs as required for project completion.

Task 4. System Efficiencies and Conservation Opportunities

The Consultant shall identify system efficiencies within the Middle Piney Drainage and present opportunities for conservation. This shall include, but not be limited to, a literature review and a discussion at the scoping meeting with the project sponsor on efficiencies of existing irrigation units and conservation. The Consultant shall also review conveyance losses throughout the system.

Task 5. Identify Areas of Need and Demand Projections

The Consultant shall use the spreadsheet model developed for the Green River Basin Plan or the State Mod Model developed for the Upper Green River Storage Study, as approved by the Project Manager, to identify areas of shortage. The shortages evaluation shall include, but not be limited to, an evaluation of irrigation needs, industrial needs, municipal needs, and fishery habitat needs. The Consultant shall quantify the shortage and, using the information developed in Task 6, develop a list of storage sites to satisfy the shortages.

The Consultant shall examine the need for additional water storage within the Middle Piney Creek Basin. This effort shall include meetings with the State Engineers Office and others to gain their input. After the potential needs are identified, the Consultant shall prepare demand projections for the area to the year 2025. The Consultant shall use the demand projection data in the Green River Basin Plan to complete this task. Projections shall be based on Department of Administration and Information population projections, industrial/commercial demand projections, city/county planning office records, and others. The Consultant shall utilize this information to prepare estimates of water and reservoir usage to the year 2025, including irrigation, industrial, municipal, recreation, fisheries and wildlife, and other uses.

Task 6. Middle Piney Creek Hydrology

The Consultant shall determine the water yield of the Middle Piney Creek watershed including average flows, high flows, low flows, and the annual hydrograph for the stream. This information will be used to determine water available for storage.

The Consultant shall prepare a flood inundation map of the area immediately below the reservoir to verify the hazard classification of the dam.

Task 7. Evaluation of the Existing Structure

The Consultant shall conduct a field evaluation of the existing structure on Middle Piney Reservoir to determine if the structure could be rehabilitated or enlarged to allow increased storage in the reservoir. Additionally, the Consultant shall determine if rehabilitation or enlargement of the facility will provide adequate water to meet the needs of the users.

The Consultant shall review the ownership of the structure on Middle Piney Reservoir and any water storage rights provided by the structure. A review of water rights on Middle Piney Creek shall also be conducted.

The Consultant will conduct an easement and right-of-way review of all adjacent property that would be affected by the rehabilitation or enlargement of the Middle Piney Dam and Reservoir. The information will be compiled and provided with descriptions of the easement or right-of-way type.

Task 8. Enlargement Potential

The Consultant shall evaluate the potential to enlarge Middle Piney Reservoir to allow storage to meet the water demands identified in Tasks 5 and 6. The Consultant shall evaluate structure types and spillway alternatives. Alternate storage sites to meet the needs of the users will also be evaluated for consideration in permitting. These alternative sites will be evaluated at a conceptual level only.

Task 9. Geotechnical Evaluation

The Consultant shall conduct initial geotechnical testing at Middle Piney Reservoir to evaluate materials present and subsurface conditions for the potential rehabilitation or enlargement. Testing will be limited to no more than three drill holes and three backhoe pits. The drilling and testing will require a special use permit from the USDA Forest Service. Some level of NEPA analysis will be necessary for the testing, and the Consultant shall begin working on acquisition of the special use permit early in the project schedule.

Only reconnaissance level geotechnical studies will be required for any alternative sites.

Task 10. Preliminary Designs

The Consultant shall prepare preliminary designs for rehabilitation of the existing structure on Middle Piney Reservoir if rehabilitation is a feasible means of supplying the needed additional water to the users. In addition, the Consultant shall prepare preliminary designs for enlargement of Middle Piney Reservoir, if this proves to be the best method for supplying the needed additional water. The Consultant shall include maps, drawings, and other items to clearly present its proposed preliminary designs.

Task 11. Environmental and Permitting Issues

The Consultant shall provide an overview of potential environmental issues that will be encountered if the Middle Piney Reservoir control structure is rehabilitated, if a new structure is constructed and the reservoir is enlarged, and if an alternate storage structure were to be constructed as identified under Task 8. The overview will include, but not be limited to, issues such as threatened and endangered species, wetlands, cultural and

historical resources, and water quality. Permitting issues shall also be defined and an overview of the permitting process provided.

Task 12. Cost Estimates

The Consultant shall provide construction cost estimates that include all construction components. The cost to end-user calculations shall include all identified and recommended improvements for the rehabilitation and potential enlargement of the structure.

The Consultant shall provide permitting cost estimates to include all permits, easements, and clearances necessary for the project. These cost estimates will be based on year 2009 construction and will include 10% for construction engineering and 15% for construction contingencies as outlined in Section C.4 above.

Task 13. Economic Analysis and Project Financing

Subtask A. Ability to Pay

The purpose of this analysis is to assist in determining a fair and equitable financing plan for the project and to provide information that can be used to determine conditions and level of state assistance. The Consultant shall prepare a life-cycle cost analysis for the project components of the alternatives selected in Task 7 and Task 8. Life-cycle cost estimates shall include operation and maintenance costs, administrative costs, debt retirement, WWDC "Repair and Maintenance Account" funding, costs that are not eligible for WWDC funding, etc. These cost estimates shall be itemized so the sponsor and the WWDC can understand each cost component comprising the total cost estimate. The cost estimates must be of sufficient accuracy to allow alternatives to be compared with each other. The Consultant shall generate recommendations relative to the annual financial commitments that the sponsor could make to retire the construction debt and meet operation and maintenance costs.

The Consultant shall document conversations with funding agencies to collaborate assumptions made by the Consultant based on information given by the funding agencies. The Consultant shall also develop specific information needed to make applications to local, state (including WWDC), and Federal agencies. This information should include timelines, trigger dates, agency criteria, funding requirements, and the conditions and requirements of legal entities recognized by the State of Wyoming.

Subtask B. Benefit-Cost Analysis

The Consultant shall perform a benefit-cost analysis utilizing input and data generated during the course of this study. This information may be supplemented with material acquired from or through various state agencies and the University of Wyoming. The WWDC shall assist the Consultant in the coordination of the benefit-cost analysis.

Task 14. Legal Entity

The Consultant shall review and provide recommendations on the development of a of legal entity, recognized by the State of Wyoming, that will own, operate, maintain, and manage the facilities that have been rehabilitated or enlarged by implementation of study findings. This task shall include an analysis of the type of district (public entity) that would operate in the most effective manner for the objectives and purposes of sponsor organization(s). To provide adequate time for the sponsor to make decisions regarding the type of entity to pursue, recommendations under this task shall be provided by December 31, 2006.

Task 15. Reports

On or before July 1, 2007, the Consultant shall submit to the WWDC ten (10) copies of the draft report and one (1) project notebook as described in Subsection C.2.b., above, providing the results of all work completed in the study.

After receipt and incorporation of WWDC and the Sponsor's review comments, the Consultant shall submit the final report to the WWDC on or before September 1, 2007. The final report shall include a separate environmental report in the appendix if required for additional funding. The final report shall consist of fifteen (15) hard copies and one (1) unbound reproducible original of the final report, twenty (20) hard copies and one (1) unbound reproducible original of an executive summary, twelve (12) CD copies containing both the executive summary and the final report in both Microsoft Word and Adobe Acrobat formats, and one project notebook as described in Subsection C.2.b, above. The digital reports shall be completely assembled, contained in one Word file and one Acrobat file, and shall be the same version as the hard copies. The summary shall outline the purpose, findings, recommendations, and configuration of the project and shall include detailed cost estimates. The summary shall not exceed ten (10) pages. All reports shall be signed pursuant to Section C.5 above.

Task 16. Project Presentation and Public Hearing

Upon completion of the final report, the Consultant will present its findings at a public meeting in the project area. The Consultant shall publish notice of the meeting not less than once each week for two weeks prior to the meeting. The Consultant will also meet with the WWDC in Cheyenne to present the results of the study.

The record of the project results presentation will include formal and informal notices; any written comments, statements, or exhibits received; and other pertinent data. The record will also include either recorded testimony or a memorandum summarizing the views and comments presented at the meeting.

If the sponsor chooses to request construction funding from the WWDC, a public hearing will be held in cooperation with WWDC to obtain public input. Information and materials

to be presented at the hearing will be developed by the Consultant after consultation with WWDC.

Key project personnel will attend the meeting and the hearing and will participate in the presentation.

Task 17. Project Coordination

A scoping meeting shall be held in the project area with the project sponsors and the Wyoming Water Development Office to discuss the scope, foreseeable issues, possible alternatives, and desired results. The Consultant shall also conduct a site visit to verify surveys, verify existing conditions, and meet with affected parties. Additional meetings with other appropriate entities (e.g., U.S. Forest Service, U.S. Army Corps of Engineers, and Wyoming Water Development Office) shall be held on an as-needed basis.

Task 18. Stream Gaging

The Consultant shall prepare final design plans and specifications for the installation of two gaging structures. One gaging structure shall be located on the inlet to Middle Piney Reservoir; the second gaging structure shall be located on the outlet of Middle Piney Reservoir. The location of these gaging structures will be chosen with consultation from the Wyoming Water Development Office.

The Consultant shall aid the Wyoming Water Development Office in the contractor selection process. The Consultant shall obtain the services of a subcontractor as appropriate to construct the gaging structures as per final design plans and specifications. Approval and billings for the subcontractor shall be handled per Section 5.C. of the Contract. The Consultant shall also provide construction management services during the construction of the structures.

Task 19. Surveying

The Consultant shall prepare a survey of the Middle Piney Reservoir storage area. This survey shall be of sufficient detail to obtain a Permit to Construct from the Wyoming State Engineer's Office. This survey shall have 5-foot contours. The survey shall be integrated with previous surveys that were completed as part of previous phases.

Task 20. Permit Acquisition

The Consultant shall obtain the necessary permits in order to construct the project. The following permits shall be obtained as a part of this task:

- Section 404 Dredge and Fill Permit (U.S. Army Corps of Engineers)
- Special Use Permit (U.S. Forest Service)

- Permit to Construct (Wyoming State Engineer's Office)
- NPDES Permit (Wyoming Department of Environmental Quality)

It is assumed that an Environmental Assessment (EA) will be required as a part of the permitting process. The following clearances shall be obtained as a part of the EA:

- Endangered Species Act
- National Historic Preservation Act
- Fish and Wildlife Coordination Act

Task 21. Final Geotechnical Investigation

The Consultant shall conduct a final geotechnical investigation so that the final design can be completed. It is assumed that no work shall begin on the project site until the proper permits (e.g., Special Use Permit from U.S. Forest Service) have been acquired.

Subtask 21.1 Drilling and Piezometer Installation

Additional subsurface drilling, in-situ testing, and sampling shall be performed to further explore the ground conditions in the right abutment landslide. One to two deep borings, from 100 to 250 feet deep, shall be drilled between the dam and the south slope of the valley near the campground. The drilling depth estimate is based on the observations from previous boring B-1 that the slide debris extends deeper than 77 feet. The deep boring(s) shall reach the depth required to penetrate the slide debris fully. The information gathered from these boring(s) shall support evaluation and design of any deep seepage control measures that may or may not be required in the future, depending on the performance of the shallow cutoff trench.

At least four additional borings shall be drilled, up to 50 feet deep each, to explore the dam foundation and cutoff trench alignment.

Falling head tests shall be attempted at discrete intervals as the boreholes are advanced through the slide debris. It is understood that the success of this testing method will depend on whether or not the boreholes stand open in the test zones below the casing.

The drilling conditions and recovered materials shall be carefully logged by a qualified engineering geologist as drilling proceeds (and prior to disturbance of the core by placement in core boxes). Where intact bedrock is encountered, the lithology, bedding characteristics and orientation, texture, hardness, strength, cementation, degree of fracturing and weathering, and Rock Quality Designation (RQD) shall be recorded on the core logs. Any unusual conditions encountered during drilling, such as water loss zones, voids, or soft zones shall also be recorded on the drill logs. Core samples shall be preserved in core boxes that indicate the core hole and depth interval. Soil samples collected during drilling of unconsolidated material shall be properly labeled and preserved as possible samples for laboratory analysis.

The borings shall be completed with open standpipe piezometers to allow for monitoring of groundwater levels. The depth of well screen completion intervals shall be determined based on the stratigraphy encountered.

Subtask 21.2 Test Pits

A trackhoe shall be used to investigate the shallow subsurface conditions (generally less than 15 feet) at selected locations in the dam foundation and along the cutoff trench alignment in the right abutment. Backhoe excavations shall generally consist of shallow test pits or short trenches up to 15 feet deep. The excavations shall allow for removal of surface soils for examination of the character and competency of shallow bedrock materials. Test pits shall also allow for determination of bedrock structure (strike and dip) in areas of interest where the bedrock is covered by surficial soils. Test pits shall also be used to evaluate the general depth of alluvial, colluvial (slope deposits), and shallow margins of the landslide deposit. The material exposed in the test pits or trenches shall be logged by an engineering geologist who shall also collect representative samples for soils classification and laboratory testing. The track hoe shall also be used to help create a drilling pad and access for the drill rig as needed. It is assumed that 3 days of backhoe time shall be required.

Subtask 21.3 Geotechnical Materials Testing

Soil and rock core samples recovered from the landslide deposit shall be tested for engineering index properties. If adequate intact samples can be obtained from the basal slide plane of the landslide deposit, strength testing by direct shear shall also be conducted. Additional bulk sampling and testing of soil materials from the proposed borrow area near the campground shall also be performed. Table 1 summarizes the number and types of tests that are anticipated for planning purposes.

Table 1
Laboratory Tests for Dam Foundation and Borrow Area

ASTM Designation	Test Description	Number of Tests Anticipated	
		Soil	Basal Slide
D2216	Soil Moisture	10	
D422	Grain Size Analysis	8	
D4318	Atterberg Limits	8	
D698	Standard Proctor Compaction	4	
D5607	Direct Shear		6
D4767	Consolidated, Undrained Triaxial Shear	6	
D2435	Consolidation	3	

Subtask 21.4 Engineering Geologic Report

The results of the subsurface investigation will be presented in an Engineering Geologic Design Memorandum. Interpretive geologic cross-sections will be prepared. The location of any potentially problematic zones detected during drilling such potential seepage zones will be shown on the cross-sections.

The Engineering Geologic Design Memorandum will include the following:

- Updated engineering geologic map of the dam and reservoir area;
- Interpretive geologic cross-sections of the dam foundation area;
- Description of the geologic conditions in the dam foundation and reservoir area;
- Description of available construction materials (embankment fill, filter/drain and aggregate, and riprap materials); and
- Specific recommendations for foundation treatment and use of materials for dam and cutoff construction.

Task 22. Final Design and Specification Preparation

The Consultant shall prepare final design plans and specifications for the rehabilitation of Middle Piney Reservoir. The design shall include detailed plans and specifications for all structures and systems (e.g., foundation, embankment, outlet works, spillway, gaging, and instrumentation).

Draft copies of the design shall be provided to the Wyoming Water Development Office for review at the 60 and 90 percent completion stages. A project meeting shall be held at the project site after the 60 percent comments have been incorporated into the design so that the project sponsors can review the status and direction of the project. Progress and review meetings shall be held with Wyoming Water Development Office on an as needed basis throughout this task.

The Consultant shall perform appropriate geotechnical analyses to develop the design layouts in sufficient detail to support detailed engineering cost opinions for embankment construction and associated earthwork and foundation treatment requirements. The following analyses shall be completed in support of dam safety evaluation and design:

- Evaluation of foundation treatment requirements;
- Seepage and slope stability analyses;
- Embankment zoning template (upstream/downstream slopes, use of on-site borrow and materials from required excavations, special filter/drain zones, etc.); and
- Earthwork and foundation design plans and cost estimates.

The final design plans and specifications shall include the following components:

- Site map showing dam footprint, cutoff trench footprint, and general location of other structural elements such as spillway and outlet works;
- Design drawings showing foundation and cutoff trench excavation plans;
- Design drawings showing treatment requirements for the dam and cutoff trench;
- Design drawings detailing typical sections of the dam and cutoff trench (including details for tie-in between the dam Zone 1 and cutoff trench backfill at the right abutment);
- Design drawings detailing spillway and outlet works (including typical sections and construction details); and
- Design specifications for all work to be completed.

A detailed cost estimate shall be provided at the 100 percent completion stage. The design plans shall be generated using AutoCAD 2006 or later. All design plans and specifications shall be completed by or under the direct supervision of a professional engineer (PE) licensed in the State of Wyoming.

Task 23. Acquisition of Access and Rights of Way

The Consultant shall aid the Wyoming Water Development Office and the project sponsor in identifying and acquiring access and rights of way.

Task 24. Discretionary Task

The Consultant shall place $20,000 of the proposed project budget in the discretionary task. The task is included to allow changes in the scope as the project develops or as new issues are discovered. The Office project manager and the Consultant shall agree on any work to be accomplished under this task and the cost of the work. No work will be initiated or funds spent for this task without direct written authorization from the Office project manager.

LEVEL III SCOPE OF SERVICES:

Task 1. Bidding

This task assumes that the Wyoming State Procurement Office will complete solicitation of the Bid Documents. The Consultant will assist the Wyoming Water Development Commission (WWDC) in bidding the project by performing the following, which also serve as the work products for this task.

Work Products:

A. Coordinate bid letting date, time, and place with Owner and prepare final Invitation to Bid.

B. Identify potential contractors and suppliers, and distribute copies of Invitation to Bid as appropriate. Maintain a record of prospective bidders and suppliers whom contract documents have been issued.

C. Conduct, at a date and time selected and a place provided by the Office project manager, a pre-bid conference to:

a. Instruct prospective bidders and suppliers as to the types of information required by the contract documents and the format in which bids should be presented.
b. Review special project requirements and contract documents in general.
c. Receive requests for interpretations and answer questions.
d. Prepare minutes of the conference and issue required addendum.

D. Interpret construction contract documents. Prepare and issue addenda to the construction contract documents when necessary.

E. Review the bids for accuracy and determine the acceptability of the apparent successful bidder. Review the formal bid tabulation sheets (from Procurement), evaluate bids, and make written recommendations to the WWDC concerning contract award.

F. Provide additional sets of plans, specifications, and contract documents to the successful bidder and the U.S. Forest Service (USFS), if necessary.

G. Review the Contractor's performance bonds, payment bonds and insurance certificates for completeness, accuracy, and acceptability. Consultant's review of the insurance certificates is only for determining if the Contractor maintains the type and amounts of insurance required by the contract documents.

Task 2. Construction Management

The Consultant shall complete the Construction Management tasks listed below. All work shall be performed by or supervised by a professional engineer licensed in the State of Wyoming.

Work Products:

A. Conduct a pre-construction conference. The Consultant shall prepare an agenda for the conference, and prepare and distribute minutes. The pre-construction conference will include, but not be limited to, a discussion of the project startup, project schedule, staffing, submittals, processing payment applications, critical work sequencing, change orders, record documents, permit compliance and project safety.

B. Review and comment on the Contractor's initial and updated construction schedule and advise the Office project manager and USFS as to acceptability.

C. Schedule and conduct weekly progress meetings, and other meetings with the Office project manager, USFS and the Contractor when necessary, to review and discuss construction procedures and progress, scheduling, engineering management procedures, and other matters concerning the project. Prepare and distribute accurate meeting minutes. Provide weekly progress reports and photologs to the Office project manager.

D. Review drawings, submittals, and other data submitted by the Contractor as required by the construction contract documents. The Consultant's review shall be to assure conformity to the construction contract documents.

E. Serve as liaison with Contractor, working principally through Contractor's superintendent, and assist in providing interpretation of the construction contract documents. Transmit clarifications and interpretations of construction contract documents to Contractor, Office project manager, and USFS.

F. Receive and review guarantees, tests and approvals which are to be assembled by the Contractor in accordance with construction contract documents.

G. Interpret construction contract documents when requested to do so by the Office project manager, USFS, or Contractor. Formally respond to any Requests for Information (RFI's).

H. Give written notifications of observations regarding defects or deficiencies in the Contractor's work relating to compliance with drawings, specifications, and contract documents.

I. Advise Contractor or its superintendent of the commencement of any work requiring shop drawing or sample submission if the drawing or submission has not been approved.

J. Investigate pertinent site conditions when Contractor maintains that differing subsurface and physical conditions have been encountered, and document actual site conditions. Review and analyze Contractor claims for differing subsurface and physical conditions.

K. Establish and furnish Contractor with necessary baselines and control points which will be used as survey datum for the work.

L. Conduct on-site compaction density testing services during construction. Review test results for compliance with the plans and specifications. Copies of testing results will be maintained.

M. Provide documentation and administer the processing of change orders, including applications for extension of construction time. Evaluate the cost and scheduling aspects of all change orders and, where necessary, negotiate with the Contractor to obtain a fair price for the work. Said negotiation shall be subject to the prior approval of the Office project manager.

N. Review and process the Contractor's monthly payment requests, and forward to the Office project manager when appropriate. Consultant's review shall be for making a full independent mathematical check of the Contractor's payment request. Consultant is responsible for verifying the quantities of work and materials which are the basis of the payment requests. Consultant shall keep a record of daily quantities and have the Contractor sign off on totals before submitting payment requests to the Office project manager.

O. Issue Field Orders or Work Change Directives as necessary to ensure conformance of work products with the overall design intent.

P. Maintain log of certified payrolls to be supplied from Contractor. Review payrolls for conformance with applicable 2017 and future Wyoming Wage Rate Determinations. Provide notice to Contractor, the Office project manager, and/or USFS if discrepancies are identified.

Task 3. Field Inspection

The Consultant shall complete the Field Inspection tasks listed below. All work shall be performed by or supervised by a professional engineer, or in some cases a professional geologist, licensed in the State of Wyoming.

Work Products:

A. Staff the construction site full time with the necessary number of qualified engineers/inspectors to observe progress of the work and to adequately manage the project. Maintain a daily construction log of activities.

B. Conduct onsite observations of the work to determine if the work is proceeding in accordance with the construction contract documents.

C. Monitor the changes in the apparent integrity of the site (such as differing subsurface and physical conditions, existing structures, and site related utilities when such utilities are exposed) resulting from construction related activities.

D. Inspect materials, equipment, and supplies delivered to the worksite. Reject materials, equipment, and supplies which do not conform to the construction contract documents.

E. Complete materials testing as required by the Contract Documents.

F. Observe field tests of equipment, structures, pipe and appurtenances and review the resulting testing reports to assure conformity with the contract specifications, informing the Office project manager of results as appropriate.

G. Report to the Office project manager work which is known to be defective, or which fails any required inspections, tests, or approvals, or has been damaged prior to final payment; and advise whether the work should be corrected or rejected or should be uncovered for observation, or requires special and/or additional testing, inspection, or approval.

H. Maintain a photograph and/or video file and a file of submittals for the project and provide same to the Office project manager and USFS upon project completion. The photo records shall include date, time, and location of the photo.

I. Provide geotechnical inspection of foundations below all bearing structures and during grouting operations.

Task 4. Project Closeout

The Consultant shall complete the Project Closeout tasks listed below. All work shall be performed by or supervised by a professional engineer, or in some cases a professional geologist, licensed in the State of Wyoming.

Work Products:

A. Upon substantial completion, inspect the construction work and prepare a punch-list of the items to be completed or corrected before final acceptance of the project. Submit results of the inspection to the Office project manager, USFS, and the Contractor.

B. Upon completion or correction of all items of work on the punch list, conduct a final inspection to determine if the work is completed. Provide written recommendations to the Office project manager concerning final payment, including a list of items, if any, to be completed prior to making such payment.

C. As-Constructed Drawings:

Maintain a marked set of drawings and specifications at the job site based on personal observations and data provided by the Contractor. Upon completion of the project, revise the construction drawings and produce an As-Constructed set of Record Drawings. Submit draft copies of the drawings to the Office project manager and USFS for review. Provide a final As-constructed drawing set of 3 mil wash-off Mylar reproducibles to both the Office project manager and the USFS,

and a final electronic copy created in a USFS supported version of AUTODESK/CIVIL 3D, as well as a printable .pdf, to both the Office project manager and the USFS.

D. Coordinate project closeout with relevant permitting agencies and project stakeholders including the USFS, U.S. Army Corps of Engineers, and Wyoming State Engineer's Office, Safety of Dams Division.

E. Complete and submit a final construction report to the Office Project Manager and USFS. Report shall detail overall construction activities, issues encountered and how issues were addressed, and any changes made during construction.

F. Create and provide hard copy and printable .pdf operation and maintenance manuals/data to WWDC, USFS, and Middle Piney Watershed Improvement District staff.

G. Provide qualified staff to assist WWDC, USFS, and Middle Piney Watershed Improvement District staff with startup of the completed project.

H. Provide warranty inspection after warranty period is complete. Advise WWDC and USFS of warranty items. Provide Notice to Contractor regarding warranty items and ensure that warranty items are corrected.

Task 5. Office Support

Wenck shall provide the following services in support of the primary project tasks:

Work Products:

A. Office Support for the in-field inspection staff
   a. Secretarial services;
   b. Accounting services;
   c. Copying;
   d Printing

Task 6. Zone 6 Embankment, Oversized Rock and Weir Augmentation Evaluation

The Consultant shall perform the following:

- Evaluate excavated material from the cutoff trench and existing embankment excavations to determine if the Zone 6 Embankment specification requirement of 15% passing the No. 200 sieve can be reduced to 5% passing the No. 200 sieve.

- Evaluate if the excavated oversize rock material from the cutoff trench and existing embankment excavations can be used as grouted riprap to replace the articulated concrete blocks (ACBs) revetments planned for road embankment protection.

- Evaluate relocating the weir downstream from the location identified in the bid documents to facilitate construction and protect the structure from rock slides/avalanches.

In addition to the indicated evaluations, this task shall also include all necessary coordination with the Contractor, USACE, USFS and the WWDO. The Consultant shall hold a review meeting with the USACE, USFS and the WWDO to discuss their evaluation findings and recommendations.

Work Products:

A. The Consultant shall prepare a Tech Memo detailing their investigations and recommendations. The Tech Memo shall include a detailed description of the recommendation benefits and include cost estimates for each of the identified evaluations. The Consultant shall provide a draft of the Tech Memo to the USACE, USFS and the WWDO for review and comment. The Consultant shall incorporate USACE, USFS and WWDO review comments into the final Tech Memo.

B. Following written USACE, USFS and the WWDO concurrence to the Tech Memo, the Consultant shall make the necessary revisions to the plans and/or specifications to reflect the approved changes.

C. The Consultant shall prepare Contractor Work Order(s) and/or Contractor Change Order(s) and negotiate with the Contractor for a price to incorporate the approved changes into the project.

Task 7. Discretionary Task

The Consultant will place $150,000 of the proposed project budget in the discretionary task. The task is to allow the Consultant to evaluate changes to the project during the construction phase. The Consultant shall not use any of the Discretionary Task funding without prior written approval of the Office project manager.

Task 8. Final Grout Work

At the request of the Office, and if needed, the Consultant shall design, bid and perform construction management services to complete the reservoir grouting program. Work shall include, but not be limited to:

- Project management, coordination, and meetings
- Final design of modified grouting program to efficiently target remaining areas of concern
- Data gathering and analysis of the curtain's response to first fill of the reservoir
- Drawings, specifications and bidding documents
- Bidding and award of the grouting program to a grouting contractor
- Construction management and administration of the grouting program.

The Consultant shall not use any of the Final Grout Work Task funding without prior written approval of the Office project manager.

Task 9. Project Grouting Report

The Consultant shall provide a project grouting report at the completion of the project. The Report shall address the project permeation and improvement grouting programs. The Report shall include sections addressing:

- Grout Curtain Design
- Drilling Including: Location, Hole Sizes, Depth, Logging, etc.
- Grout Materials and Mixes
- Drilling and Grouting Equipment
- Construction Sequencing
- Drilling Procedures
- Grouting Methods
- Packer Testing Including: Procedures, Locations, Testing and Results, etc.
- Grout Results Including: Take Volumes, Injection Pressure, etc.
- Field Supervision, Inspection and Monitoring
- Contractor/Engineer Daily Field Reports
- Post Grouting Assessment
- Project grouting costs.

Task 10. Seepage Control System Improvements and Site Evaluation

Considering dewatering efforts during construction have exceeded expectations, the Consultant shall evaluate the seepage collection and drainage system to determine if improvements are necessary for post-construction operations. Should improvements to the system be required, the Consultant shall make recommendations as to the modification, coordinate with the USFS, as well as provide design and construction management services to complete such improvements.